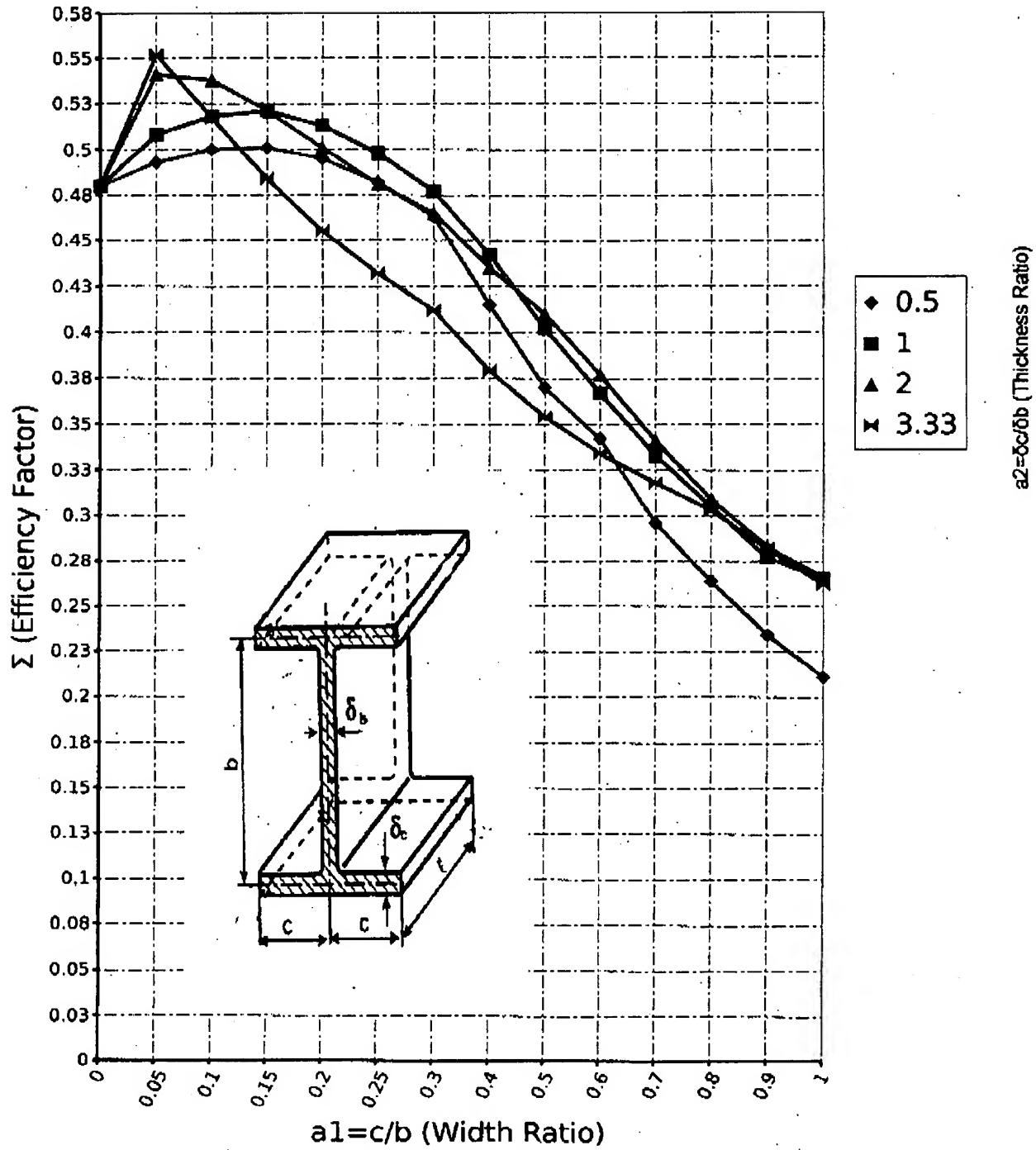


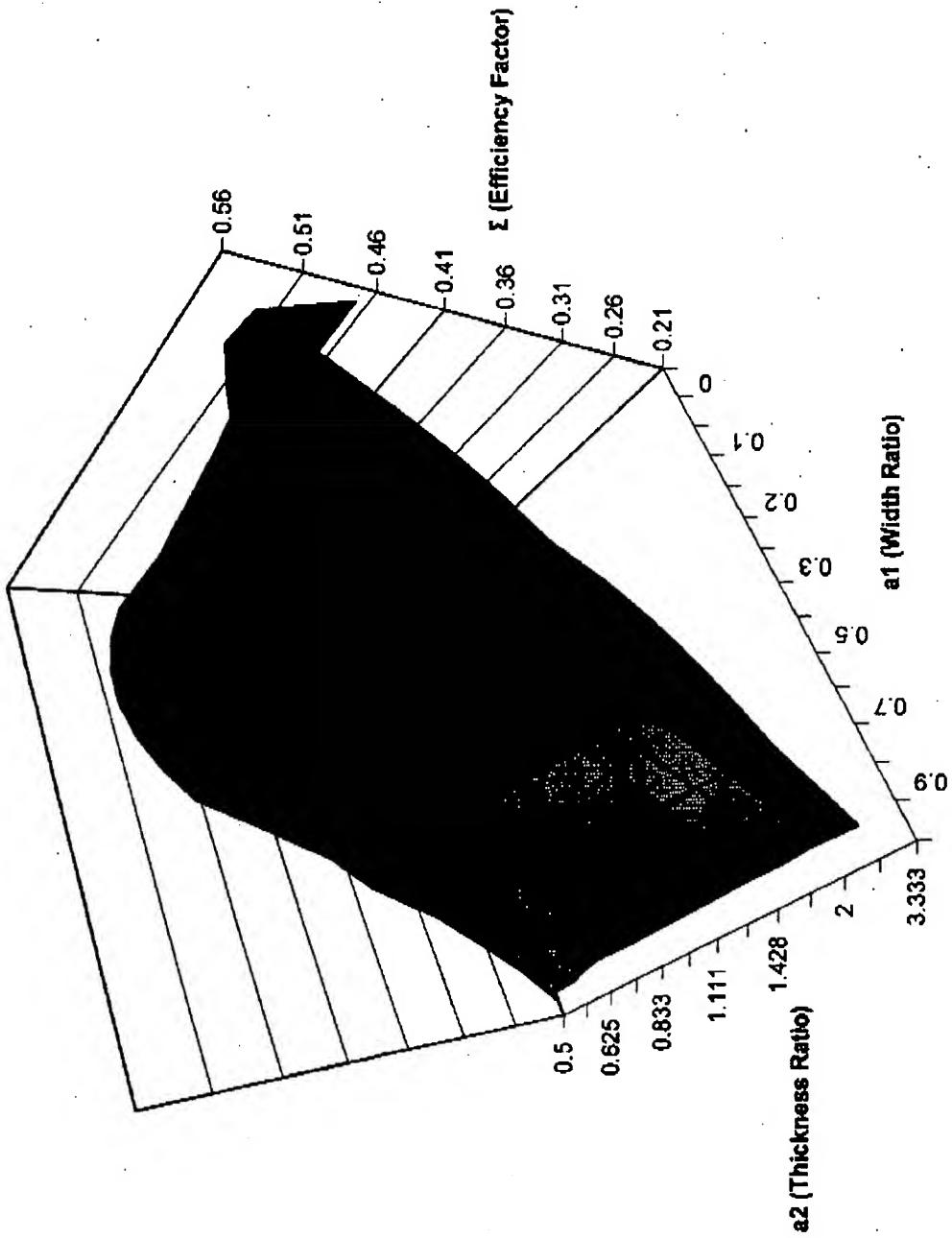
(2)

Σ	a1											
	0	0.05	0.1	0.15	0.2	0.25	0.3	0.4	0.5	0.6	0.7	0.8
0.5	0.48	0.49	0.5	0.5	0.48	0.46	0.42	0.37	0.34	0.3	0.26	0.23
0.56	0.48	0.5	0.51	0.51	0.5	0.49	0.47	0.42	0.38	0.32	0.29	0.24
0.63	0.48	0.5	0.51	0.51	0.51	0.49	0.47	0.43	0.39	0.36	0.32	0.27
0.71	0.48	0.5	0.51	0.51	0.52	0.51	0.49	0.47	0.43	0.39	0.36	0.29
0.83	0.48	0.5	0.51	0.52	0.51	0.5	0.47	0.43	0.4	0.36	0.33	0.28
1	0.48	0.51	0.52	0.52	0.51	0.5	0.48	0.44	0.4	0.37	0.33	0.28
1.11	0.48	0.51	0.52	0.52	0.51	0.5	0.48	0.45	0.4	0.37	0.34	0.31
1.26	0.48	0.52	0.52	0.52	0.51	0.5	0.48	0.45	0.41	0.37	0.34	0.31
1.43	0.48	0.52	0.52	0.52	0.51	0.5	0.49	0.45	0.41	0.37	0.34	0.31
1.67	0.48	0.52	0.52	0.52	0.51	0.49	0.48	0.45	0.42	0.37	0.34	0.31
2	0.48	0.54	0.54	0.54	0.52	0.5	0.48	0.47	0.44	0.41	0.38	0.34
2.5	0.48	0.56	0.53	0.51	0.48	0.48	0.44	0.41	0.38	0.37	0.35	0.31
3.33	0.48	0.55	0.52	0.48	0.46	0.43	0.41	0.38	0.35	0.33	0.32	0.3
												0.28

**Efficiency Factor Σ for Thickness Ratios (a_2)
versus Width Ratio (a_1).
Double-T Shapes.**



Efficiency Factor Σ versus Thickness Ratios (a_2) and Width Ratio (a_1), for Double T Shape.





Alcoa Engineered Products

Tel: (800) 233-3165

Fax: (800) 252-4646

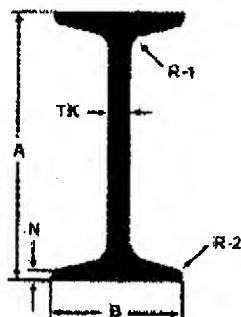
STRUCTURAL I-BEAMS, AMERICAN STANDARD

Alloy 6061-T6

25 Ft. Lengths

ASTM B 308

Spot Marked



PSI MPa	Wt. lb/ft	Wt. kg/m	H	B	K	L	W	Wt. lb/ft	Wt. kg/m	PSI MPa	PSI MPa
851A	.240	.380	.170	.270	.125	1.963	483	10	.851A		
851D	.240	.380	.170	.270	.100	2.595	518	8	.851D		
851B	.240	.380	.190	.290	.110	2.644	536	8	.851B		
851F	.240	.380	.190	.290	.110	3.284	506	6	.851F		
851K	.240	.380	.230	.330	.140	4.303	1086	10	.851K		
851L	.240	.380	.230	.330	.140	5.054	1004	8	.851L		
851G	.240	.380	.270	.370	.160	6.348	970	6	.851G		
851T	.240	.380	.350	.450	.210	10.993	1096	4	.851T		

Structural Shapes

TWPM
Double-T Shape

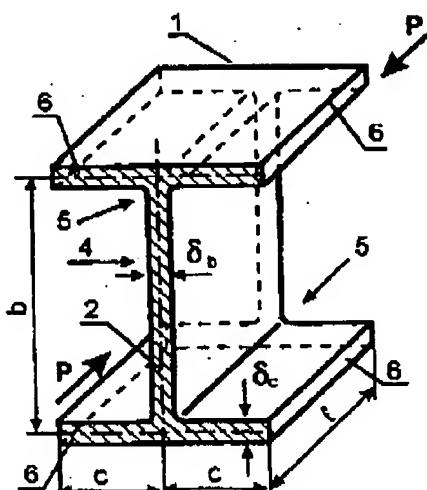


FIG.3

(PAGE 1 OF 4)

Alcoa Structural I-Beams, American Standard vs. Optimum Weight Structural Element (OWSE)

SECTION	ALLOY	INTENSITY* (LB/INCH^2)	SIZE, INCHES				EST. WT/FT(LB)	WEIGHT REDUCTION (%)
			A	B	TK	N		
851A	6061-T6		3.000	2.330	0.170	0.170	2.165	
OWSE (for 851A)	6061-T6	14.0	5.052	1.427	0.148	0.298	1.817	16.080
		12.0	5.089	1.440	0.144	0.289	1.793	17.167
		10.0	5.116	1.451	0.140	0.281	1.755	18.929
		8.0	5.143	1.462	0.135	0.270	1.704	21.272
	6082-T6	6.0	5.000	1.425	0.124	0.249	1.628	29.346
		14.0	4.983	1.402	0.145	0.290	1.753	19.031
		12.0	4.992	1.413	0.142	0.283	1.728	20.261
		10.0	6.009	1.420	0.137	0.275	1.682	22.298
851B	6061-T6	8.0	4.973	1.414	0.131	0.261	1.593	26.398
		6.0	4.832	1.378	0.120	0.241	1.429	34.008
			4.000	2.880	0.190	0.190	2.040	
	6061-T6	14.0	5.118	1.446	0.160	0.298	1.888	6.597
		12.0	5.220	1.477	0.148	0.298	1.887	7.489
		10.0	6.315	1.507	0.146	0.251	1.654	7.173
		8.0	5.384	1.530	0.142	0.263	1.667	8.469
OWSE (for 851B)	6082-T6	6.0	5.467	1.588	0.136	0.272	1.629	10.368
		14.0	5.072	1.433	0.145	0.298	1.830	10.272
		12.0	5.179	1.468	0.147	0.294	1.867	6.595
		10.0	5.274	1.496	0.145	0.289	1.845	6.590
	6061-T6	8.0	5.335	1.517	0.140	0.280	1.834	10.098
		6.0	5.407	1.541	0.135	0.269	1.786	12.332
			4.000	2.768	0.328	0.190	2.710	
851F	6061-T6	14.0	5.838	1.649	0.171	0.341	2.424	10.664
		12.0	5.881	1.664	0.187	0.334	2.395	11.613
		10.0	5.931	1.682	0.183	0.325	2.369	12.975
		8.0	5.988	1.702	0.157	0.318	2.309	14.812
	6082-T6	6.0	6.046	1.724	0.150	0.301	2.237	17.474
		14.0	5.770	1.650	0.169	0.337	2.369	12.580
		12.0	5.808	1.643	0.165	0.330	2.336	13.819
		10.0	5.848	1.668	0.180	0.321	2.293	16.406
		8.0	5.890	1.674	0.165	0.310	2.238	17.535
		6.0	5.927	1.690	0.148	0.295	2.149	20.893

* Note: Intensity = (Compressive Force)/(Length^2). Intensity for aviation structures lies in the range 2.84 - 14.2 lb/inch^2

(PAGE 2 OF 4)

Alcoa Structural I-Beams, American Standard vs. Optimum Weight Structural Element (OWSE)

SECTION	ALLOY	INTENSITY* (LB/INCH^2)	SIZE, INCHES				$\frac{a_1}{(=c/b)}$	$\frac{a_2}{(=5c/5b)}$
			b	c	5b	5c		
851A	6061-T6		2.83	1.17	0.17	0.17	0.41	1
OWSE (for 851A)	6061-T6	14.0	4.76	0.71	0.18	0.3	0.15	2
		12.0	4.8	0.72	0.14	0.29	0.15	2
		10.0	4.84	0.73	0.14	0.28	0.15	2
		8.0	4.87	0.73	0.14	0.27	0.15	2
	6082-T6	6.0	4.75	0.71	0.12	0.26	0.15	2
		14.0	4.67	0.7	0.14	0.29	0.15	2
		12.0	4.71	0.71	0.14	0.28	0.15	2
		10.0	4.73	0.71	0.14	0.27	0.15	2
851B	6061-T6	8.0	4.71	0.71	0.13	0.26	0.15	2
		6.0	4.69	0.69	0.12	0.24	0.15	2
			3.81	1.33	0.19	0.19	0.35	1
	6082-T6	14.0	4.82	0.72	0.15	0.3	0.16	2
		12.0	4.92	0.74	0.16	0.3	0.15	2
		10.0	5.02	0.76	0.16	0.29	0.15	2
		8.0	5.1	0.77	0.14	0.26	0.15	2
OWSE (for 851B)	6061-T6	6.0	5.19	0.78	0.14	0.27	0.15	2
		14.0	4.78	0.72	0.18	0.3	0.15	2
		12.0	4.85	0.73	0.15	0.29	0.15	2
		10.0	4.93	0.75	0.14	0.29	0.15	2
	6082-T6	8.0	5.06	0.76	0.14	0.28	0.15	2
		6.0	5.14	0.77	0.13	0.27	0.15	2
			3.81	1.4	0.33	0.19	0.37	0.58
851F	6061-T6	14.0	6.5	0.82	0.17	0.34	0.16	2
		12.0	6.65	0.83	0.17	0.33	0.16	2
		10.0	6.81	0.84	0.16	0.33	0.15	2
		8.0	6.87	0.85	0.16	0.31	0.15	2
	6082-T6	6.0	5.75	0.86	0.16	0.3	0.15	2
		14.0	5.43	0.81	0.17	0.34	0.15	2
		12.0	5.48	0.82	0.16	0.33	0.15	2
		10.0	6.63	0.83	0.16	0.32	0.15	2
		8.0	6.68	0.84	0.15	0.31	0.15	2
		6.0	6.63	0.84	0.15	0.3	0.15	2

* Note: Intensity = (Compressive Force)/(Length^2). Intensity for aviation structures lies in the range 2.84 - 14.2 lb/inch^2

(PAGE 3 OF 4)

Alcoa Structural I-Beams, American Standard vs. Optimum Weight Structural Element (OWSE)

SECTION	ALLOY	INTENSITY* (LB/INCH^2)	SIZE, INCHES				EST. WT/FT(LB)	WEIGHT REDUCTION (%)
			A	B	TK	N		
851G	6061-T6		8.000	4.000	0.270	0.270	4.995	
OWSE (for 851G)	6061-T6	14.0	7.678	2.169	0.224	0.449	4.196	15.998
		12.0	7.831	2.216	0.222	0.444	4.246	14.978
		10.0	8.020	2.274	0.220	0.440	4.312	13.874
		8.0	8.264	2.349	0.217	0.434	4.400	11.913
		6.0	8.603	2.452	0.214	0.428	4.528	9.339
	6082-T6	14.0	7.543	2.131	0.220	0.441	4.049	18.934
		12.0	7.702	2.180	0.219	0.437	4.108	17.747
		10.0	7.900	2.240	0.217	0.433	4.184	16.222
		8.0	8.158	2.319	0.214	0.429	4.288	14.157
		6.0	8.518	2.428	0.212	0.424	4.439	11.128
851T	6061-T6		12.000	5.000	0.350	0.350	8.911	
OWSE (for 851T)	6061-T6	14.0	10.212	2.885	0.298	0.597	7.421	16.720
		12.0	10.415	2.947	0.296	0.591	7.511	15.711
		10.0	10.666	3.024	0.292	0.585	7.626	14.418
		8.0	10.991	3.124	0.289	0.578	7.782	12.672
		6.0	11.442	3.262	0.285	0.569	8.009	10.120
	6082-T6	14.0	10.023	2.831	0.293	0.586	7.149	19.772
		12.0	10.235	2.896	0.290	0.581	7.254	18.597
		10.0	10.498	2.977	0.288	0.576	7.388	17.088
		8.0	10.840	3.081	0.285	0.570	7.571	15.044
		6.0	11.319	3.227	0.282	0.563	7.838	12.043

* Note: Intensity = (Compressive Force)/(Length^2). Intensity for aviation structures lies in the range 2.84 – 14.2 lb/inch^2

(PAGE 4 OF 4)

Alcoa Structural I-Beams, American Standard vs. Optimum Weight Structural Element (OWSE)

SECTION	ALLOY	INTENSITY*	SIZE, INCHES				a1 (=c/b)	a2 (=δc/δb)
			b	c	δb	δc		
851G	6061-T6		7.73	2	0.27	0.27	0.26	1
OWSE (for 851G)	6061-T6	14.0	7.23	1.08	0.22	0.45	0.15	2
		12.0	7.39	1.11	0.22	0.44	0.15	2
		10.0	7.58	1.14	0.22	0.44	0.15	2
		8.0	7.83	1.17	0.22	0.43	0.15	2
		6.0	8.17	1.23	0.21	0.43	0.15	2
	6082-T6	14.0	7.1	1.07	0.22	0.44	0.15	2
		12.0	7.27	1.09	0.22	0.44	0.15	2
		10.0	7.47	1.12	0.22	0.43	0.15	2
		8.0	7.73	1.16	0.21	0.43	0.15	2
		6.0	8.09	1.21	0.21	0.42	0.15	2
851T	6061-T6		11.65	2.5	0.35	0.35	0.21	1
OWSE (for 851T)	6061-T6	14.0	9.62	1.44	0.3	0.6	0.15	2
		12.0	9.82	1.47	0.3	0.59	0.15	2
		10.0	10.08	1.51	0.29	0.58	0.15	2
		8.0	10.41	1.56	0.29	0.58	0.15	2
		6.0	10.87	1.63	0.28	0.57	0.15	2
	6082-T6	14.0	9.44	1.42	0.29	0.59	0.15	2
		12.0	9.65	1.45	0.29	0.58	0.15	2
		10.0	9.92	1.49	0.29	0.58	0.15	2
		8.0	10.27	1.54	0.28	0.57	0.15	2
		6.0	10.76	1.61	0.28	0.56	0.15	2

* Note: Intensity = (Compressive Force)/(Length^2). Intensity for aviation structures lies in the range 2.84 --14.2 lb/inch^2